The Chronicle of the EARLY AMERICAN INDUSTRIES ASSOCIATION

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Farm Implements of the 18th Century

[Mr. Albert E. Lownes, to whom we are indebted for the following invaluable definitions from an early American work on farming, which would be available to hardly any of our members, makes the following comments: "Very few books on the applied arts were printed in America before the beginning of the nineteenth century and most of these were merely reprints of English books. One of the most useful of the indigenous books is *The New-england Farmer; or Georgical Dictionary*, by Samuel Deane. Deane was a professor at Bowdoin College and the book was printed in Worcester, Massachusetts, by that thoroughly practical idealist, Isaiah Thomas. The first edition was printed in 1790 and a second enlarged edition in 1797. Unless otherwise noted, the quotations following are from the second edition. The articles are alphabetically arranged as befits a dictionary." Even the casual reader will be struck with the author's obvious assumption that practically none of the tools or implements which he describes could at that time be purchased in this country, but must necessarily be made by the farmer himself, or under his direction. — Ed.]

Axe, a necessary tool for farmers. A narrow axe is meant; for a broad axe is a carpenter's tool. A narrow axe should have a thick poll, as in that part it commonly fails soonest. It should be made of the best of iron and steel, be quite free from cracks and flaws, and nicely tempered; not so soft as to bend, nor so hard as to break. Take care that you do not grind your axes thin at first, till you learn by using them what their temper is, and whether they will bear it. A rounding edge is best for chopping large logs, a straighter one for smaller wood. Let the helve of an axe be made of the toughest of wood, either walnut or white oak. Let it be set in the centre of the eye, and at right angles with the outer side of the axe; let it be small near the eye, that the hands may not be too much jarred by the strokes in chopping, and gradually larger toward the other end. Three feet is the greatest length that almost ever will be needful: Shorter for chopping sticks not uncommonly large. It should never be less than 32 inches. A good deal of rubbing with a whetstone (after the axe is ground on a coarse grindstone,) is best; not only to bring it to a good edge that will not crumble, but chiefly to make the blade very smooth, that it may enter the wood easily, and not stick too fast when entered.

Carriage, a general name of carts, wagons, sleds, and other vehicles, employed in carrying loads. Those which are designed for riding, are called pleasure carriages.

Cart, a wheel carriage, of essential importance to the farmer, to carry his manures, remove stuff for fences, get in his crops, etc. Horse carts are sometimes used; but ox carts generally. Of these latter some are short, some long. The short cart is eight feet long, four feet wide, and two feet high. The long cart is used for carting hay, straw, and other bulky matters; therefore it is made from ten to twelve feet, or more, in length, four feet in breadth; and instead of sides it has only long, sharp pointed stakes. In some parts of the country they lengthen out a short cart, with what are called ladders, when they cart hay. But this is not a good practice. The load lies higher than in a long cart, and is more liable to be overset. The greatest excellencies of a cart, are lightness, strength, and durableness. Therefore, it is very proper to construct carts of ash timber. But as white oak is not so apt to decay, the principal parts are commonly made of that. A cart should be kept under shelter when it is not in use. It will last the longer. The axle and wheels should be made of the toughest of oak. Wheels to be used on a farm only need not be shod with iron. A wooden rim,

(*Continued on page 6, column 1*)

The File Maker

By William B. Sprague

[The capital letters interspersed through the text refer to the list of authorities at the end of the article. The photographs, from which the illustrations were taken, were supplied by the Bucks County Historical Society, Doylestown, Penna., whose courtesy is hereby gratefully acknowledged.]

While files, in one form or another, were made and used by almost every primitive people, and iron files date back at least several thousand years (B), their manufacture by hand, as an American industry, was comparatively short-lived. We find mention of file-cutters among the artisans of Philadelphia in 1698 (A), but apparently the first American file "factory" was that of Broadmeadow & Co., of Pittsburgh, which operated in a small way about 1829. With this exception, practically all the files used in this country were imported, — principally from England, — up to about 1845, when John Rothery, an Englishman, commenced their manufacture, at Matteawan, N. Y., and was so successful that a number of other concerns soon entered the field (A, B), but even until the introduction of file-making machinery in the third quarter of the century, English files predominated here (A). William Nicholson obtained an American patent in 1802, for a file-cutting machine which was "described as being so simple, that, when properly adjusted, a blind person may cut a file with more exactness than can be done in the usual method with the keenest sight" (H), but we cannot find that the machine was ever put into practical use.

The material with which the file-maker began his work came to him in the form of *blanks*, or bars of steel which had been rolled flat (A, B, F) and cut to approximate lengths (B), and the first operation was to forge

them into exact shapes, which was called *mooding out* (B). This was done by two workmen, the *maker* (C, H) or *smith* (B) and the *striker* (B, C), the latter dealing heavy blows upon the heated metal with a ponderous two-handled hammer (Fig. 1a), and the latter holding the blank in place on the anvil, and striking with a smaller single-handled hammer (C, D, Fig. 1c) "somewhat conical in shape, the wider end forming the face" (C). "The flat faces of the hammers covered a considerable portion of the blank file at each stroke, expanding and levelling it at one operation" (C). When triangular and half-round files were being forged, they were placed in grooved bosses or dies of the proper shape, fixed in the anvil (C, D, H). The tang was shaped by cutting into the blank on both sides with a chisel to form sharp square shoulders, and then *drawing out* the part so cut (C, H). "The maker accustoms himself, as much as possible, to the forging of one description of file, in order that, by the concentration of his skill and attention on one article, he may attain perfection in its manufacture" (C). A smith and striker could mood out about eighteen dozen twelve-inch blanks in a day (B).

The blanks were then *annealed*, or *lighted* (C) to soften them so that the teeth might be more easily cut (A, B, F). This operation consisted of heating them blood red (C, F) for about twelve hours (B), and then permitting them to cool gradually (B, G). They were then straightened with hand hammers (B), and the surfaces cleaned and levelled by grinding the coarse blanks on a large grindstone (B, F), and by filing (A, C), or *stripping* (B, H), the smaller ones. The blanks were then oiled (A, F, G) or greased (E), so that the chisel might slip over them more easily, and were ready for the cutter.

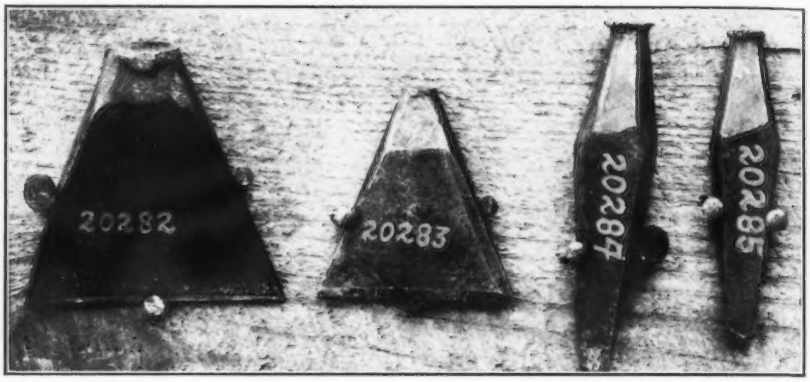


Fig. 2—FILE CUTTER'S CHISELS AND PUNCHES

From left to right: (a) and (b) Chisels for cutting the teeth of files. (c) and (d) Punches for cutting the teeth of rasps.

The cutting room was "a long, narrow apartment with a range of windows in front" (C). Each cutter was equipped with one or more hammers of a most unusual design (Fig. 1b), varying in weight, according to the size of the file to be cut, from seven or eight pounds down to one or two ounces (B, E). "The peculiar shape gives better direction to the blow and puts the weight at the lower end of the hammer head, providing greater ease in working" (A); "the handle is so placed as to allow the mass of metal to be pulled toward the workman while making the blow" (C). The chisels were short, from two to three inches long (C, E, F, Fig. 2a, b), "in order to have the requisite stiffness and to be held conveniently in the fingers of the left hand" (B), "somewhat like a pen" (C). The length of the edge was slightly greater than the width of the file to be cut (B, C, D), varying from a half inch to two inches and a half (C, E, F), and the angle at which they were sharpened was anywhere from sixteen to forty degrees (B). The anvil was square and of iron (A), mounted on a heavy stone base (A, G,) or "in the face of a strong wooden post, to which a wooden seat is attached, at a small distance below the level of the anvil face" (D). The cutter was supplied with blocks of lead, with grooves in which to place triangular and half-round blanks (C, F), but flat blanks were laid on the bare face of the anvil (D), in either case with the tang pointing toward the workman (A, B, F). The ends of the blank projected over the front and back of the anvil (D), and over each end was pressed a strap or loop of leather (A, B, C), each of which was held taut by one of the cutter's feet (F), somewhat like a stirrup (C, D, H) except that while the point of the file was being cut, only one strap was used, "the point resting on the anvil and the tang on a prop on the other side of the strap" (D).

(*Continued in next issue*)

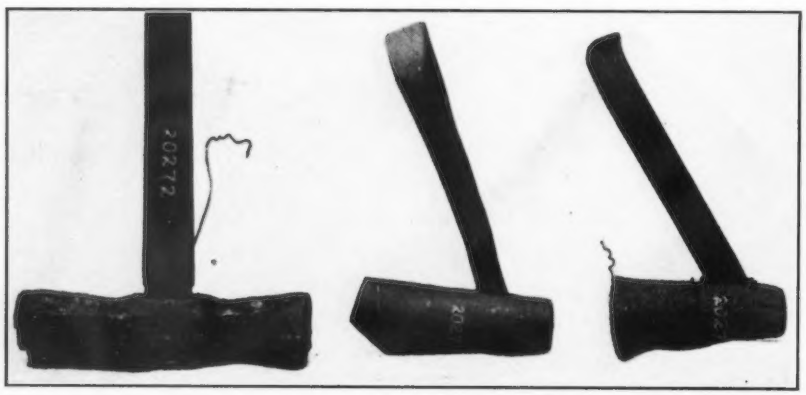


Fig. 1—FILE MAKER'S HAMMERS

From left to right: (a) Striking hammer (about half the length of the handle shown here) with which the blank was roughly shaped. (b) Hammer used with the chisel in cutting the teeth on the blank. (c) Forging hammer for perfecting the work of the striking hammer.

A harrow for pulverizing the soil was patented by G. Page on August 7th, 1847. The patent was for a revolving single disc on the side of a peculiar form of plow. —J. N. K.

Cardan's Lamp

By L. L. Thwing

The first known inventor of a lamp was Philon of Byzantium, who lived in classical times. His invention was, however, of no practical importance. The drawings which we have of his invention appear in the *Veterum Mathematicorum*, and are presumably drawn from the description given in the text. This text is in Greek and in Latin, and if it has ever been translated, this has not come to the attention of the various students of the history of lighting devices. Philon's lamp was an open "betty", with a device composed of a float, gears, and a rack, the purpose of which was to change the position of the wick, as the height of the oil dropped. It does not appear that even this automatic adjustment could be affected by the mechanism shown, but whether the inventor, the translator, or the artist is responsible for this, cannot be determined by as limited a Latin scholar as the writer.

The first known inventor of a practical lamp, and one that we know was used ever afterwards, was Jerome Cardan, — to give his name its English equivalent. Cardan was born in Italy, and died there in 1576. He was a physician, mathematician, and, to a lesser extent, an engineer, being the inventor of Cardan's suspension and Cardan's joint or coupling. There is a ten-volume edition (1663) of his works in the New York Public Library. The text is Latin. There is a French text of a part of the above in the Congressional Library. His first book was on arithmetic, the second on algebra, containing a chapter on cubic equations, there discussed for the first time. His best known work is *De Subilitate Rerum*, which contains the soundest physical learning of his time. This was published about 1550.

There had then been no improvement in lamps since Roman times. They were small, flat and their only technical improvement over the caveman's lamp of prehistoric time was the fact that they were covered over, and had one or two holes in the top. One was for the wick, and, as a great improvement, there was sometimes another to receive the oil. Some did, indeed, have a rudimentary wick spout.

If Cardan's description of his lamp has ever been published in French, English or German, the writer has not been able to find it. The first mention of it, in any of the above languages, is in *The Cabinet de Grollier de Severes* (1719). The lamp itself, which is there illustrated and described, was presumably fifty years older, as Grollier de Severes died in 1686. The description states that the lamp illustrated is Cardan's Lamp, improved by the addition of a reflector and pipe or chimney for the escape of the smoke. This chimney came down to within two inches of the flame. Cardan's lamp, as there shown, consists essentially of a cylindrical oil container, from the bottom of which projected a tube which was given a 90-degree bend at the wick end. As Cardan's lamp itself was evidently no curiosity, it is not described in the above book. It is, however, described in *The Dictionnaire de Trevaux* as follows: "Cardan's lamp furnishes its own oil. The oil container is a well-stoppered cylinder with a small hole at the bottom, opening into a small tube containing the wick. These lamps have been used for over thirty years by students and the clergy."

On page 239, D'Allemagne reproduces a cartoon of an 18th century "Ferblantier" or sheet metal worker. He is shown with a funnel on his head, and is otherwise decked out in his wares, among which are several lamps, one of which is evidently a Cardan's lamp. This lamp is adjustable on a vertical spindle, and the comment is made that these lamps were often pivoted at the point of attachment, so that the height of the oil above the wick could be adjusted.

The much reproduced time lamps, which have a cylindrical oil chamber with the hours blown or pressed into it, are probably a later development of Cardan's lamp, and also the much-sought-after spout lamps, although the latter may have been developed independently. There is some question about the time lamps, as they are too rare to allow one to be cut apart to discover just how the oil is delivered from the glass reservoir to the lower oil chamber. All Argand lamps, including the present day student's lamps, and possibly the time lamps, operate on the principle of the common office water cooler, which device was invented over 2,000 years ago. From the foregoing quotation from Trevaux and from the two above mentioned pictures, it does not appear that the Cardan's lamp of that time operated on this principle, although it is quite possible that Cardan intended to have it so, but that the slight change necessary to effect this was forgotten in the century that had elapsed.

The Questionnaire

With this issue of The Chronicle, we are enclosing a questionnaire, and it is hoped that every member, who is either an active collector of material pertaining to early industries of any kind, or who, as a dealer, attempts to carry such material in stock, or who is associated with a museum which displays it, will fill this out carefully and return it promptly. Copies of this will also be sent to new members, as they join. The thought behind this is perhaps too obvious to require explanation. Since the Association was organized, three years ago, we have not heard a single complaint from a collector-member that he was being pestered by dealer-members. Quite to the contrary, we are constantly besought, especially by new collectors, to advise them where they can purchase the material in which they are interested, as comparatively few dealers handle it at all. If this plan receives sufficient coöperation, it should result in the sort of mutual benefit which should be the object of every organization of this character. In planning an extended motor trip, a collector can so lay out his itinerary that he will have, as objectives, certain shops where he will be reasonably sure of seeing things in his line, rather than perhaps going many miles out of his way to visit a dealer who makes no pretense of offering anything but the usual and familiar classes of antiques. Some collectors have had very satisfactory results from circularizing dealers and asking them to be on the lookout for certain things, but a great deal of effort is wasted, if such circulars are sent out blindly and with no idea whether the recipients will have the inclination or the facilities to procure anything of the desired nature. It should also be of distinct advantage to every collector to know who else is collecting in his field, for the purpose of comparing notes and possibly exchanging material. Our collector-members also want to know where early tools and implements are on display, and as museums very seldom advertise, this seems to be the best means of keeping them informed. Presumably the museums should be glad of the opportunity to make themselves known to a body of especially interested and intelligent visitors. We understand that advertising experts expect only a very small percentage of replies to any request for the filling out of a questionnaire, but we hope

that the advantages to each person doing so, in this case, will be so apparent, that the information turned in will give a comprehensive idea of the various interests of our members, and suggest many ways in which they can effectively coöperate with one another.

The first patent issued in America from the records of the Colony of the Massachusetts Bay in New England reads as follows: "A Generall Court of Elections, held at Boston the 2th, 4th Mo., 1641. Whereas Samu: Winslow hath made a pposition to this Court to furnish the countrey wth salt at more easy rates than otherwise can bee had, & to make it by a meanes, & way, wch hitherto hath not bene discovred. It is therefore ordered, that if the said Samu: shall wthin the space of one yeare, set upon the said worke, hee shall enioy the same, to him &. his assosiats, for the space of 10 yeares, so as it shall not bee lawfull to any other pson to make salt after the same way during the said years; pvided, nevrthelesse, that it shall bee lawfull for any pson to bring in any salt, or to make salt after any othr way dureing the said tearme./." — A. E. L.

A typewriter was patented July 23rd, 1829, by William Austin Burt, who received patent No. 259 for his invention which he called a "Typographer." The first typewriter that would write and was practical was invented in 1867 by Christopher Latham Sholes, who also coined the word "type-writer." The machine was patented June 23rd, 1868 (No. 79,265) and was known commercially as "The Type-Writer." This machine had a movable carriage, a lever for turning paper from line to line, a converging type bar, a keyboard like that of a piano in two rows, the keys of which were of black walnut wood and the letters painted on in white. It had all the letters in capitals, figures from 2 to 9, a comma and a period. It was originally manufactured by E. Remington & Sons of Ilion, N. Y., and was placed on the market in 1874. A few years later they sold out their typewriter business to Wyckoff, Seamans & Benedict who afterwards organized the Remington Typewriter Company.

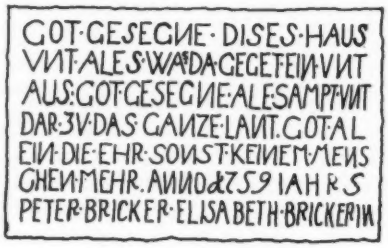
—J. N. K.

"House Blessings"

By H. K. Landis

Among the interesting features of old houses, the date-stones and similar inscriptions are the more noteworthy. They tell a story in an authoritative way, and often with refreshing originality and style. For this is not a new idea born on our pioneer soil. When Roman influences made themselves felt among the peoples to the northward, a style of designating houses was adopted and today these can be seen on the fronts and over the doors built by the survivors of that period, as well as in succeeding ages. It was a charming custom, but it slowly gave way, as individualism was replaced by a socialised culture and finally to what we have today.

Therefore it is not surprising that our early immigrants from Saxon sources



HOUSE DATE-STONE

should bring with them and place upon their buildings the survivals of a once beautiful custom. In this mechanized age, we are losing the love for carved stone and the signs of dominant personality, but in the early days it was almost a general practice. As an example of this, the Landis Valley Museum found a date-stone on the front of a sandstone house to the southward from the village of Schoeneck in Lebanon County, Pa. It was in a good state of preservation and the sandstone block was neatly carved as shown in the accompanying illustration. This is a form of *haus-segen* or "house blessing", and a similar one was found, although almost illegible, on a house, built in 1782, between Myerstown and Reistville. The translation of the German text is something like this: "God bless this house and all that goes into and out of it. God bless each and every one and also the entire land. To God alone is the honor, more than to any man. a.d. 1759 years. Peter Bricker and his wife Elizabeth Bricker."

Those early Swiss and German settlers were religious people. Similar *haus-segen* were done in colored ink with a pen and hung upon the interior walls, the favorite being the one in Zollikoffer's prayer book (*Gebet Buch*) which begins with: *"Jesu! wohn in meinem haus. Weiche nimmermehr daraus"* etc. This means: "Jesus dwell in this house, never move out of it" etc.

During the World War, there was a revival of the talismanic amulet in the form of a "Letter for Protection" about 4 by 6 inches in size, which was folded and hung from the neck. Thousands of doughboys from middle Pennsylvania wore them, for the text proclaimed that "Whoever carries this letter with him, he shall not be damaged through the enemy's guns or weapons." It refers to the Magdeburg letter which claimed to possess similar properties. The pow-wow books also claimed that those who possessed them would be protected from their enemies and damage through lightning, fire and flood. So it will be seen that these protective talismans were held in high esteem by the generation which cherished them, and therefore they form a very worthy subject for study, when delving into the mysteries surrounding the folklore of the Pennsylvania Germans. The benign influence of a *haus-segen* date-stone must have been a great comfort to these perturbed pioneers.

The first platform scale in this country was built in 1830 by Thaddeus Fairbanks. He patented it in June, 1831, marking the birth of the modern scale. The method of weighing, prior to the invention, utilized the old Roman steelyard, suspended somewhat crudely in a gallows frame, on which no man could warrant to give the correct weight within fifty pounds. The even-balance scale was also used. One of Fairbanks' first designs was a farm scale, consisting simply of some castings with the pivot properly set, a beam and a set of weights. The original factory located at St. Johnsbury, Vt., was a wooden building 25 by 60 feet, which combined both factory, warehouse and salesroom.—J. N. K.

The engraving which Paul Revere made for Edmund Quincy's *Treatise of Hemp-Husbandry*, published in Boston in 1765, seems to be the earliest American illustration of an industrial process. — A. E. L.

Early American Industries Association

Early American Industries Association

W. B. Sprague, President
43 Cedar Street, New York
Burton A. Kollmer,
Secretary and Treasurer
c/o Staten Island Historical Museum,
Richmond, Staten Island, N. Y.
S. E. Gage, Chairman
Admissions Committee
144-54 Sanford Avenue,
Flushing, N. Y.
Howard G. Hubbard, Chairman
Recruiting Committee
South Hadley, Mass.

Communications should be addressed as follows: Pertaining to The Chronicle, to W. B. Sprague. Applications for membership, to S. E. Gage. Suggestions for prospective members, to Howard G. Hubbard. Other matters to Burton A. Kollmer. Addresses as above.

This issue was printed by Leon S. Case Flushing, N. Y.

W. B. Sprague, *Editor.*

Our Purpose

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men and other workers.

Dues

The annual dues are one dollar, payable September first, for the year immediately ensuing. *The Chronicle* for the current year is sent to all members without additional charge. Back numbers (except Nos. 6, 10, 11 and 12) may be secured from the Treasurer for 20c each. For further information, address any of the officers.

Annual Meeting

The third annual meeting of the Association, and by far the most interesting and successful that it has yet held, took place at Mr. Lewis N. Wiggins' Old Tavern, Northampton, Mass., on August 29th. Members began to arrive at the hotel about four o'clock on the previous afternoon, many of them with bundles under their arms, which, when opened, generally proved to contain one or more "What-is-it?s", some of which were quickly and convincingly identified, others causing long and spirited debates. About seven, all those on hand sat down to a delicious meal, generously provided by the always hospitable Mr. Wiggins. It must be remembered that the Old Tavern is the birthplace of the Association, and it may be due to that fact, as well as to its delightful atmosphere and excellent cuisine, that our meetings there have always been so much enjoyed. After dinner, the guests adjourned to the "Yankee Room", where they were entertained by Mr. Orton, who told of a project, with which he is connected, for the reconstruction of an old Vermont village, including many of the old industries, Mr. Eaton, who related some of his experiences among the natives of the Southern Highlands, Mr. Hubbard, who discoursed on wooden and stone water pipes, and who succeeded in bringing about a general discussion of the subject, Mr. Sprague, who recounted a few adventures in his searches for old tools, and Mr. Stow, who exhibited two pieces of glass, recently made, which only the experts could distinguish from genuine Stiegel. At the business meeting on Saturday morning, the Treasurer presented his report for the fiscal year September 1st, 1935, to August 29th, 1936, which was as follows:

Receipts

Balance on hand, Sept. 1, 1935	$ 35.08
Dues from members	527.00
Donations	294.40
Sale of back numbers of Chronicle	40.45
Non-member subscriptions	21.00
Advertising	7.27
	$925.20

Disbursements

Printing	$783.60
Stationery and postage	76.11
Miscellaneous	7.34
	$867.05
Balance on Hand	$ 58.15

The question of readjusting the annual dues was then raised and thoroughly discussed. At the outset, there appeared to be very strong support for a proposal to increase the dues for all members to $2.00, but, after the subject had been thoroughly threshed out, it was unanimously agreed that it would be a great mistake to force out those who would not feel that they could stand the raise, and that it would be wiser to create several classes of members, so that each could determine what his individual obligation should be, according to his own resources and the extent of his interest in the work of the Association. Another point, which aroused considerable interest, was the proposal that the Association should incorporate. The principal advantages which were pointed out were the insurance of permanency and the distribution of responsibility for carrying on the work of the Association among a responsible board of directors, and the President was authorized to appoint a committee to study the matter further, to report its conclusions to the members through the medium of The Chronicle, and to take a letter ballot as to what course should be followed. Mr. William B. Sprague was elected President of the Association to succeed himself, there being no other nominations. Mr. Earle T. Goodnow, having been nominated for Secretary and Treasurer, explained that the demands of his business would preclude his continuing to give the necessary time to the discharge of these duties, and nominated Mr. Burton A. Kollmer, who was thereupon unanimously elected. Mr. S. Edson Gage was elected Chairman of the Admissions Committee. Mr. Albert E. Lownes having declined reëlection as Chairman of the Recruiting Committee, the chairman then called for volunteers to serve on this committee, and the following responded: Mrs. Emma F. Bradford, George R. Cope, Allen Eaton, J. H. Edgette, S. Edson Gage, Charles R. Harte, Howard G. Hubbard, Mrs. Mira F. Linton, Miss Helena Penrose, Charles Messer Stow, Lewis N. Wiggins, and Major L. B. Wyant. After the meeting adjourned, this committee convened, and elected Mr. Howard G. Hubbard its chairman. Many new and ingenious schemes were advanced for the building up of the membership, and it is confidently anticipated that this most important field will be well covered during the ensuing year. The list of this committee was unfortunately mislaid, and, if anyone's name has been omitted here, Mr. Hubbard would like to be notified, as well as to hear from other members who are willing to serve on this committee. His address is South Hadley, Mass.

Farm Implements

(*Continued from page 1, column 2*)

well made, will last several years and is easily renewed, and it will do less injury to the grass grounds in passing over them. The softer the soil is, the wider the rim of a wheel should be. Some have the rims a foot wide, to cart upon marshes.

CHURN, a wooden vessel, in which butter is produced by churning. It is broad at the bottom and narrow at the top to prevent the contents from coming out at the top during the agitation. But the shape does not perfectly answer this design. Churns are commonly made of pine. But when they are new, they give a tang of the wood; so that oak is generally preferred. The hoops are of ash, and should be made very smooth and regular, that the vessel may be easily cleaned and kept sweet. But on great farms, and where the dairies are large, the barrel churn is to be preferred. Its name gives the idea of its shape; and when it equals a barrel in size it can be easily managed. On each head of it is an iron spindle, and on each spindle a winch, by which the vessel is turned on a horse made for the purpose. A much greater quantity of cream or milk may be churned in this than in the common churn; and the labour is easier. There are two boards within this churn on each side of the centre, like shelves, which serve to agitate the cream. The aperture in the barrel churn ought to be five or six inches square, to which a stopper must be exactly fitted, which must be kept in its place by a bar of iron across it, held fast by staples.

CHURNING, the motion which is given to cream or milk in a churn, in order to separate the butter. In common churns, this work is very laborious, though it falls to the lot of the weaker sex most commonly to perform it. But the labour may be lightened by a springy pole placed overhead, in the same manner as that of a turner's lathe, to the loose end of which the staff of the churn is tied. This pole will pull up the dash after every stroke; which when done by hand is the heaviest part of the work.

CLOG, a wooden instrument fastened to the neck or leg of a beast to prevent his leaping over or breaking fences. The best clog for the fetlock of a horse is made of one piece of tough wood bent over at one end. Into a notch near this end a leathern strap, nailed to the long part of the clog, is slipped over the end. It may be put on or taken off in an instant.

COULTER, an important part of a plough. See *Plough.*

CRADLE, a frame joined to a sithe, useful in harvesting, by the help of which three times the quantity of grain may be cut down in a given time that can be cut with a sickle and laid tolerably even and regular for binding in bundles. It is oftener used for cutting oats and rye than for wheat. There is danger, however, of too much waste in cradling when the corn is thick and heavy or does not stand upright; the labour also would be too painful and tiresome.

CULTIVATOR, a plough with a double share and two mouldboards, useful in raising ridges and in hoeing plants that grow in rows, as in the new husbandry. See that *Article.*

DIBBLE, among gardeners, the name of a tool or forked stick with which they set plants.

DRAY, or car, a slight kind of carriage drawn by one horse. It consists of a pair of thills connected by two or three cross bars. The hinder ends of the thills slide along on the ground. It draws heavily on bare roads, but on grass land much more easily. The horse must carry much of the load on his back. In case of necessity, it is better than no carriage.

DRILL, "a name given to an instrument for sowing seeds in the new method of horse hoeing husbandry. It plants the corn in rows, makes the channels, sows the seeds in them, and covers them with earth when sown; and all this at the same time with great expedition. The principal parts of a drill are the seed box, the hopper, the plough and its harrow, of all which the seed box is the chief. It measures or rather numbers out the seeds which it receives from the hopper and is for this purpose as an artificial hand; but it delivers out the seed much more equally than can be done by a natural hand. Whoever is desirous of knowing more intimately the whole apparatus for this method of sowing may see it fully described and illustrated with figures by Mr. Tull in his *Horse Hoeing Husbandry." Dict. of Arts.* (An "engine" of almost identical construction was described and illustrated by John Worlidge in his *Systema Agriculturae,* London, 1669. *A. E. L.*) The drills which are described by European writers are very complicated and costly machines. But I have had barley, carrot, and some other seeds evenly and expeditiously drilled by a hand drill, being only a light tin measure with a hole through the bottom and a broad headed spike in the hole. When this is used, channels on the ridges must be previously made with the head of a rake. But a drill which I would rather recommend for use, on account of its lightness and simple construction, is a drill upon small wheels to be drawn by a man or by one or two boys. To the hinder part of the axis is fastened a long shaped tapering vessel, serving at once as a hopper, drill box and hose. Below the middle is a partition through which is a hole for the seeds to pass into the hose. The hose has a sliding cover which stops and opens it two or three times in a second by being fastened to a spring that is moved by one of the wheels. A coulter, to open the channel, may be made fast to the forepart of the axis, as much longer than the spokes of the wheels as the depth at which the seeds are to be buried: And this, as well as the box, may be fixed higher or lower on the axis at pleasure, according as the sowing is to be performed on ridges or on a level; or according to the depths at which different seeds are to be sown. A small harrow or rake to cover the seeds may as well follow this, as a drill of any other construction. I have seen a drill nearly of this construction in possession of the Rev. Mr. Little of Wells [Maine]. And I cannot but prefer such a hand drill to a heavy complex one drawn by a horse: For the tread of a horse makes such holes in the soil as must needs render the operation of drilling less accurate or more imperfect. Two boxes with coulters may as well be fixed on the machine I recommend as one; but it will increase the labour of drawing it.

DUTCH HOE, *sometimes called a Scuffle;* an iron instrument with a sharp steeled edge, nearly in the shape of the letter D, with a shank from the rounding part five or six inches long which passes into a handle of about six feet in length. It is of use to clean walks and avenues in gardens. No gardener should be without one of these instruments.

FAN, an instrument used in separating corn from its chaff. Of late the fan is almost out of use. See *Riddle, Winnowing Mill.*

(*Continued in next issue*)

Early American Industries Association

Membership

Membership lists should be amended as follows: (N) indicates new member; (Ch.) indicates change of address.

CONNECTICUT

Bridgewater: Smith, Mrs. Russell H. (N)
New Haven: Hayward, Mrs. Thomas E., 325 Lighthouse Road (N)
Ridgefield: Huser, Thomas E. (N)

MASSACHUSETTS

Amherst: Hopkins, Mrs. Arthur J., 84 S. Pleasant St. (N) Newlon, John B. (N)
Boston: Ganz, Robert N., 19 Bay State Road (N)
Longmeadow: Bennet, Lawrence E., 76 Bliss Road (N)
Midfield: Nichols, Miss Rebecca, 353 Lawrence Road (N)

NEW HAMPSHIRE

Durham: Webster, Frank G., Mathes Terrace (Ch. from Elizabeth, N. J.)

NEW JERSEY

Elizabeth: Webster, Frank G. (Ch. to Durham, N. H.)

NEW YORK

Albany: Howgate, James C., 190 State St. (N)
New York: Hines, Earl G., 92 Gold St. (N); Wright, Richardson, Graybar Building (N)
Staten Island: Kollmer, Burton A. (Ch. to c/o Staten Island Historical Museum, Richmond)

PENNSYLVANIA

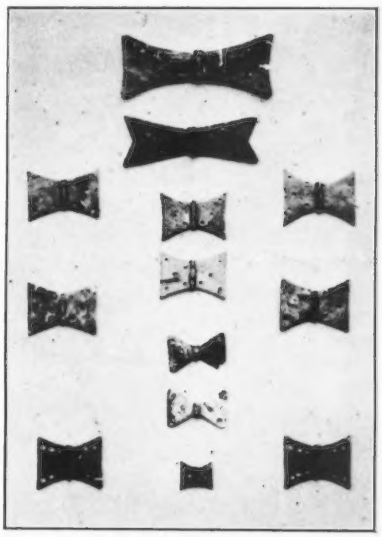
Bethlehem: Bratzman, Robert J., 532 Ontario (N)

Butterfly Hinges

By LAWRENCE B. ROMAINE

I can remember well, when I was a kid of ten, chasing over the fields after butterflies. I can remember begging to be allowed to sit up late, so as to try Mr. Holland's methods for catching moths in molasses and with lamps set out in the woods. Now I am supposed to be a man in years, and yet I can not seem "to put away childish things." The iron butterfly is rarer than the live one, and consequently inspires a stronger passion. There is no hinge or other example of the blacksmith art that surpasses the butterfly in skill of manufacture, detail of design or final ensemble. The butterfly-strap hinge is artistic, but somehow very heavy looking. The beautiful tapering strap hinge, with heart, bud or twisted finial, is graceful but nevertheless large. The H and H L hinges are quaint and bring to mind the superstitions of the past, but the design seems a bit "cut and dried." The coxcomb, the spike, the cobra, and the many other unnamed vagaries of the blacksmith's fancy, are fascinating but none touch the piquant delicacy of the butterfly. If you want to have some fun, and have an hour or two to waste, take a good butterfly hinge to a blacksmith of 1936 and let him try to copy it. First he will think it looks easy; next he will remark on the quality of modern iron and the pliability of the old material; finally he will admit that it is one tough job. Or, better still, take a piece of old bar iron (an iron wheel rim) and try it yourself; you will have more respect for the old blacksmith and for the butterfly hinges when you finish.

Of course there are hinges and hinges. Every butterfly hinge is not a real piece of workmanship by any means. I still think that, at a little



distance, the poorest specimen would rival the most delicate H L or strap in beauty; however, close up, the strap hinge might turn out to be the best piece of work. My largest 10-inch captive is not nearly as good as the small prize piece at the top of the left-hand column in the illustration; nor is "top of left" as good as its mate, "top of right." Unfortunately, the picture is not large enough to show the little notches near the butts, or all of the other detail.

Three pieces of iron are required for the manufacture of each hinge. One piece will remain in its pin or bar form, cut to the right length. The second is flattened out to almost double the spread of one wing. It is then doubled over the pin, first cutting away enough to leave room for the attachment of the other wing. The two plates are then welded tightly to the pin and pounded together, forming one complete wing. The third piece is drawn out the same way, cut away where it would overlap the fastenings of the first wing, and wrapped around the pin. This must be done with great care, for this second wrap must allow the wing to swing easily and yet be firm. Finally, the second wing is flattened out and the two leaves of iron become one. Now the rough edges are bevelled, the notches cut, and the curve of the butterfly perfected.

Once more let me state that not *every* butterfly is made this way. I picked my best example to study. In many cases, the welding of the two parts of each leaf, is but a small overlap after the joint is wrapped. Many times there is no notching, bevelling and straightening out the curves. My second largest one (second from top center) is not notched, bevelled nor smoothed. The end curves are merely cut, and the side curves would not thrill anyone. Three and four (counting down from top center) are the only pair found outside Massachusetts. These came from an old cupboard in Mrs. Demott's shed in New Jersey. I have left the original paint on number four. Five and six (five mutilated), same column, remind one of a bow tie. They are very unusual. Seven, the baby of the lot, must have been for a child's desk. The bottom pair (bottoms of each outside column) have been badly treated. Six of the original holes have been reamed for screws.

I must bring these notes to a close, out of consideration for the sensible human beings, who may read them. It is a strange mania and I attribute it to my childhood collections. If you have never examined a really good butterfly, try it out. There are some that will surprise you.

John Alden, one of the best-known of the Pilgrims, was not originally one of them at all. English law of the time required that a cooper be aboard the *Mayflower* and Alden was hired at the last minute so that the ship might be allowed to sail. Governor Bradford, in his History, mentions him thus: "Mr. Alden was hired at Southampton as a cooper. Being a likely young man he was desired as a settler; but it was left to his own choice to stay or return to England; he stayed and married Priscilla Mullins."

— A. E. L.

COMMUNICATIONS

From MR. HOWARD G. HUBBARD:

"I wonder if you know anything about the process of applying the finish which was known as *metallique moirée*, or if you can suggest any source where I could get information on it? I have recently come on a lamp done in what I take to be this finish and I would like if possible to learn something about the process. This lamp is tin, finished in a dark red, with small, light, bright blotches to give an effect quite similar to moire silk. It makes rather a handsome finish and seems to have had quite a vogue about 1825." [Tomlinson's *Cyclopedia of Useful Arts* (1852) states as follows: (Vol. II p. 844): "Moirée metallique is thus produced. Tin plate, with a somewhat thick coating of pure tin, is best adapted to this manufacture. It is well cleaned by washing its surface in caustic potash, rinsing, and drying. The acid employed is a mixture of nitric and hydrochloric, in water; 2 of nitric, 3 of hydrochloric and 8 of water, answer very well. The plate is to be slightly heated, and then quickly sponged over with the acid so as to bring out the moirée. It is then to be dipped in water, washed, and dried. If the surface has been blackened or oxidized by the acid, it may be cleaned by a solution of caustic potash. The crystals on the unprepared tin plate are usually large and indistinct; but by heating the plate up to the point of fusion of the tin, powdering it over with sal-ammoniac to remove the oxide, and plunging it into cold water, the crystals may be had small. Various modifications of the crystalline surface may be obtained by sprinkling the surface of the heated plate with water, or by holding the plate over the flame of a spirit-lamp so as only partially to fuse the tin, or by running a blowpipe flame over it. The plates are finished with a coating of transparent and slightly colored varnish." Ure's *Dictionary of Arts, Manufactures and Mines* (1850) says (p. 869): "Moirée metallique, called in this country crystallized tin-plate, is a variegated primrose appearance, produced upon the surface of tin-plate, by applying to it in a heated state some dilute nitro-muriatic acid for a few seconds, then washing it with water, drying and coating it with lacker. The figures are more or less beautiful and diversified, according to the degree of heat, and relative dilution of the acid. This mode of ornamenting tin-plate is much less in vogue now than it was a few years ago." — Ed.]

From MR. VORIES FISHER (105 So. LaSalle St., Chicago):

"Purely as a hobby and for my own amusement and use I do hand weaving. It so happens that I own three old hand looms which I bought in Brown County, Southern Indiana, some years ago and which I used to a considerable extent while living there. They are, however, so large and cumbersome that I do not have room for them in the more-or-less narrow confines of urban living conditions, and here in Chicago Mrs. Fisher and myself work on modern hand looms which we have gotten in the Scandinavian countries. Our products run all the way from heavy and crude rag rugs to the finest of Scotch woolens. We make many things, such as blankets, bed covers, table cloths, etc., for our own home, and when time in this rather busy industrial world permits, make a good many of our own clothes. I feel that I have a reasonably adequate knowledge of old looms, old weaving equipment and the methods that our Colonial forefathers employed, because, after all, the methods, technique and equipment of hand weaving has, as far as I can see, changed very little in the last few hundred years. I would, however, be very much interested to hear from any of your members who might have old hand weaving equipment, but more than this, I would be extremely interested in knowing of any old American books on the subject. Most of the literature which I have is in the Scandinavian, and contemporaneously printed, but there must have been books printed with patterns and instructions in the early days. I have not as yet allowed my interest to carry me into the spinning field, although this is definitely something that should be done, I think, to further enhance an appreciation of materials." [In reply, we referred Mr. Fisher to the article on *Textile Fabrics* in Ure's *Dictionary of Arts, Manufactures and Mines*.—ED.]

From MR. L. L. THWING:

"Having read the other day that no research ever reaches a condition of static perfection, I am encouraged to amend somewhat my recent statement that clapboards were never used in England as siding, as I have found two authorities who would disagree with me. The first is John Stow (*A Survey of London*, 1598) who, referring to a house built by sailors, says 'The house was * * * boarded close around on the inside, having none other wall from the ground to the roof, those boards not exceeding the length of a clapboard, about an inch thick, every board edging over the other, as in a ship or galley.' The second comment was written over 300 years later, and is taken from *The Aptucxet Trading Post* by Percival Hall Lombard. (See also *Old Time New England*, vol. 18). 'We know that the Fortune went back to England in 1621, laden with good clapboards as full as she could stow,' and undoubtedly some of them went into the manufacture of casks, but our studies in England indicate that clapboards were used also for outside covering of timber frame country buildings at a very early date."

From MR. BURTON N. GATES:

"A very early mention of a patent hand lantern appears in the first American edition of *Poems by Southey, Printed for Joseph Nancrede, No. 49 Marlboro' Street, 1799*. At the end of the volume is a list of the books for sale or published by Nancrede. He apparently sold stationery, offering vellum and parchment, also 'a small assortment of Mills' Patent Hand Lanterns.' Who knows what Mills' lanterns were? Might they have been English or were they American? Nancrede undoubtedly carried English goods, such as papers and books. He also lists 'French books, Latin and Greek classics, etc.' This period would suggest a candle lantern. Is there extant a Mills' Patent Lantern?"

[Upon referring the above inquiry to Mr. L. L. Thwing, we received the following reply:

"I have been unable to find any satisfactory genesis for this lantern. It is not a United States patent, nor is it an English patent, unless it is a misprint of the John Miles patent of 1787. That was for an 'agitable' or non-spillable lamp. Miles recommends it for lanterns, for which it would be highly suitable. There is a French vapor lamp, invented by Mille, but apparently at a much later date. The only other source would be the various patents issued by the various states and provinces, prior to the establishment of the United States Patent Office. An enumeration of these would be a most useful piece of research, but one involving much time, trouble and travel."

Several other collectors of lighting devices agree that "Mills" is probably a typographical error for "Miles".—ED.]